

Patent Claims

1. Process for the production of glycolipids in transgenic cells and/or organisms, comprising the following steps:

- transfer of a nucleic acid molecule that codes for a protein having the biological activity of a processive diacylglycerol glycosyltransferase to the cells or organism,
- expression of the protein having a biological activity of a processive diacylglycerol glycosyltransferase under suitable regulatory sequences in the cells or the organism, and
- if desired, recovery of the glycolipids synthesized by the biological activity of a processive diacylglycerol glycosyltransferase from the cells or the organism.

2. ~~Process~~ according to claim 1, wherein the nucleic acid molecule codes for a protein having the biological activity of a processive diacylglycerol glycosyltransferase from *Bacillus subtilis* or *Staphylococcus aureus*.

3. Process according to claim 1 or 2, wherein the transgenic cells are plant, yeast or bacteria cells, and the organism is a plant.

4. Process according to one of the preceding claims, wherein the glycolipids are glycosyl diacylglycerols and/or phosphoglycolipids.

5. Process according to one of the preceding claims, wherein the glycolipids are

- monoglycosyldiacylglycerol,
- diglycosyldiacylglycerol,
- triglycosyl diacylglycerol,
- tetraglycosyldiacylglycerol,
- glycosyl ceramide,
- diglycosyl ceramide,
- steryl glycoside,
- steryl diglycoside,
- glycosyl phosphatidylglycerol, and/or

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- diglycosyl phosphatidylglycerol.

6. Process according to one of the preceding claims, wherein the glycolipids are

- monoglucosyldiacylglycerol,
- diglucosyldiacylglycerol,
- triglucosyldiacylglycerol,
- tetraglucosyldiacylglycerol,
- glucosyl ceramide,
- diglucosyl ceramide,
- steryl glucoside,
- steryl diglucoside,
- glucosyl phosphatidylglycerol, and/or
- diglucosylphosphatidylglycerol.

7. Use of a nucleic acid molecule coding for a protein having the biological activity of a processive diacylglycerol glycosyltransferase or of a proteins having the biological activity of a processive diacylglycerol glycosyltransferase for processive glycosylation, in particular for production of glycolipids.

8. Use according to claim 7, wherein the nucleic acid molecule codes for a protein having the biological activity of a processive diacylglycerol glycosyltransferase from *Bacillus subtilis* or *Staphylococcus aureus*.

9. Use according to claim 7 or 8, wherein the processive glycosylation, in particular the production of glycolipids, takes place *in vivo* or *in vitro*.

10. Use according to one of claims 7 to 9 for the production of glycosyldiacyl glycerols and/or phosphoglycolipids.

11. Use according to any one of claims 7 to 10 for the production of

- monoglucosyldiacylglycerol,

- diglycosyldiacylglycerol,
- triglycosyl diacylglycerol,
- tetraglycosyldiacylglycerol,
- glycosyl ceramide,
- diglycosyl ceramide,
- steryl glycoside,
- steryl diglycoside,
- glycosyl phosphatidylglycerol, and/or
- diglycosyl phosphatidylglycerol.

12. Use according to any one of claims 7 to 11 for the production of

- monoglucosyldiacylglycerol,
- diglucosyldiacylglycerol,
- triglucosyldiacylglycerol,
- tetraglucosyldiacylglycerol,
- glucosyl ceramide,
- diglucosyl ceramide,
- steryl glucoside,
- steryl diglucoside,
- glucosyl phosphatidylglycerol, and/or
- diglucosylphosphatidylglycerol.

13. Tetraglucosyldiacylglycerol.

14. Glucosylphosphatidylglycerol.

15. Diglucosylphosphatidylglycerol.

16. Use of the glycolipids produced by a process according to one of the claims 1 to 6 or of a compound according to one of claims 13 to 15 in the food industry, as an emulsifier or as a detergent.

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